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ANNUAL REPORT

DIVISION OF FORESTS AND PARKS

Dept of Natural Resources

FISCAL YEAR 1971

Government Documents
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A Complex Year:

The Division of Forests and Parks, during 1971, found itself involved in an increasing variety of problems, which demanded dedication and flexibility to resolve. However, the rewards were satisfying in our management of 240,000 acres of Department lands and 2.8 million acres of private and other public forest land.

Highlights of the Division's activities are submitted in detail by the various Bureaus. In addition, there were many projects, which touched on all Bureaus, but were more Division oriented.

Personnel Training Program Begins:

During the winter months, an in-service training program was initiated to provide training for year-round personnel of the Division. A training team made up of field personnel and coordinated by Chief Hood, has developed a continuing program to make our people more knowledgeable of department activities and opportunities for up-grading themselves through a course program associated with state and community schools and colleges.

This past winter, a series of six day-long orientation meetings were held. All personnel of the office and field were required to attend.

The program will continue with emphasis now on specific programs and problem areas.

The Division is one of only two state agencies to develop such a program.

Department Exhibits A Success:

Commissioner Arthur W. Brownell directed Director Gullion to coordinate the development of departmental exhibits at the Sportsmen's Show in Boston and the Annual Flower Show at Suffolk Downs. The joint effort of the planning section, representatives of every Division created exceptionally professional exhibits at both shows. Our intent was to educate. At least from comments of the public attending the exhibits, we were successful.

Champion Trees:

A champion tree program was inaugurated by the Division this spring to bring citizen attention to the value of trees. Through the American Forestry Association, a program of national champions has been in operation for many years. Massachusetts can boast two champions in an American Beech and a Striped Maple. It is hoped that, even though we may not develop many national champions, we shall have an excellent listing of state champions. It is known that focusing attention on individual trees makes people more cognizant of the particular tree and, therefore, trees in general. So far, the response has been gratifying, but no new champions, yet.

New Beach A Boom:

During the year, a new beach was constructed at Lake Cochituate State Park. It is evident that it is a success already as season passes bought at Cochituate have doubled. Attendance figures indicated that use is just a little less than attendance at the Hopkinton State Park. The old pool has been filled in and seeded, which is now used for sunbathing and games. The construction cost was only \$69,000 for 900 feet of exceptional beautiful beach.

Milford Swimming Pool Dedicated:

During early fiscal 1971, the Milford Pool was opened for public use, bringing the number of pools operated by the Division to seven. In conjunction with the pools, a learn-to-swim program for children was started. Over 2,500 children were given instruction. The program has become so popular that parents and other adults have requested an adult learn-to-swim program. This program will be stepped up this coming year.

We are firmly convinced that it may have a direct bearing on the reduction of vandalism at these facilities. We are emphasizing that the pool is theirs to enjoy not to destroy. It seems to be having positive results, so far.

Division Soars With S.O.A.R.:

The Division, cooperating with the Old Colony Boy Scout Council, housed 425 boy scouts in October and 4,000 boy scouts in June at the Wompatuck State Park in the Hingham area. The trail and fire break work accomplished was monumental, but of greater significance was the opportunity

P E R S O N N E L

Owen Hess replaced Daniel Perrin, who was acting District Fire Warden in District 10, Hampshire County. Owen Hess was a Springfield fireman for many years.

Donald Stoddard replaced Francis McInerney, as Fire Warden in District 6, Northern Middlesex County. Donald Stoddard was a Supervisor at Willard Brook State Forest.

District Fire Warden John Harvey in Norfolk County, has accepted an assignment as District Supervisor of Rinks and Pools in the Bureau of Recreation. Donald Candlen, Senior Patrolman, in Norfolk County, is acting as District Fire Warden.

David Gallant has been appointed Patrolman in Plymouth County replacing Clifton Rogers, who resigned to work for the U. S. Forest Service.

Robert Telless was appointed Patrolman in Norfolk County to replace Henry Botelho, who resigned.

Robert Smith - General Supervisor of Rinks and Pools.

Bob has been acting in a dual capacity in the rink and pool and the ocean beaches operations. This appointment will enable him to concentrate full time on expanding rink and pool programs.

Kenton Beaujean - General Supervisor of Public Beaches.

Ken returns to the Boston office after several years as a forester, in Essex County. The first week of his new duties was highlighted by an all night vigil at Salisbury Beach on May 30, 1971, with water shortage problems caused by sand in the main line.

John Harvey - District Supervisor of Rinks and Pools.

John is the former District Fire Warden in Norfolk County. He is making his debut in the recreation field.

Napoleon Alarie - District Supervisor of Rinks and Pools

Nap has been Assistant Manager at the Worcester Rink, since its opening. He has a broad knowledge of rink problems, primarily those relating to maintenance.

The full staffing of these positions has resulted in a better distribution of the recreational work load and operation.

Russell Balch Retires:

A retirement party for Russell Balch, Forest and Park Supervisor at Bradley Palmer State Park was held at DiBurro's Restaurant in Haverhill, on December 4, 1970. About 80 of Russ's friends and associates attended. This retirement, after 32 years of service leaves an area which has been highlighted by Russ's excellent work. He will be a difficult man to replace.

Personnel Move Upward

Two changes in Forester personnel occurred during the year. In December 1970, Charles Dane, forester for Western Franklin County, took over as Acting Regional Supervisor in Region #3, Worcester County. A second change involved Kenton Beaujean going into the Boston office in May 1971 in charge of Beaches under the Bureau of Recreation.

Old Time Forester Dies

Guy W. Lucas, a graduate of Harvard Forestry School, who came to work in 1915 in the Moth Division and shortly after organized the shipping of the Massachusetts State Foresters Sawmill Unit #1 to England during World War I, died July 17, 1970. He had worked in many forestry capacities with this Department until his retirement a few years ago.

BUREAU OF FIRE CONTROL

HOWARD E. HURLEY - CHIEF

The Best Fire Record Yet:

June 30, 1971, ended another outstanding year. It was the best season in the last quarter of a century. There was only one fire that burned over 300 acres during the entire year. This fire, which burned 300 acres in the Plymouth area, was brought under control in the early evening and caused no further trouble.

In the last six months there were two fires, which caused considerable concern; the fire in Plymouth, where eight men were burned, and the other in the town of Millville, where a high tension right-of-way- was involved.

The good fire record was due to two factors; periodic rainfalls and alertness on the part of the state and the local fire departments. During the month of August, which ordinarily would be a dry month, the state received from four to eight inches of rain. The amount of rain that falls during the months of August and September generally determine the fire season, that we will have in the fall. The heavy rainfall resulted in practically no fires of any size during the entire fall. All districts had nearly two inches of rain in September and in October they received from 1.96 inches to over 4 inches. Rainfall for the year is shown in appendix 1.

Prevention Is Worth It:

The fire personnal were in a position this year to devote more time to prevention, presurpression and assisting other bureaus with work projects and study resolves.

Bureau personnel conducted fire prevention programs with over 46,000 school children. Each District Fire Warden now has a "Smokey the Bear" costume. Afteen thirteen years of existence, "Smokey the Bear" is still a great attraction, especially among the children.

The demand for fire preventions in schools has increased greatly for the past few years. Prevention materials are also in greater demand and especially from the larger cities and towns in suburban Boston. More "Smokey the Bear" prevention materials were obtained from the Forest Service, but we are still unable to satisfy all requests.

Presuppression Programs A Must:

With the assistance of equipment obtained from the Excess Property Program, many forest and tower roads were repaired. The Mt. Tekoa project in Russell and Montgomery and the Bearsden projects in Athol were expanded this year in order to give greater protection to these hazardous areas.

Because of the new construction on Route #2, in Templeton in order to give the Templeton State Forest good protection, it was necessary to rebuild an old road, which is being done by the fire personnel.

New Towers And Trucks Replace The Old:

During the year, fire towers were replaced and renovated in the following locations:

1. North Attleboro:

The new tower was completed and placed into operation in May. The tower was dedicated in the presence of 150 fire officials and others by Commissioner Arthur Brownell and Director Bruce Gullion. This project was greatly appreciated by the fire people in that section of the state.

2. Chelmsford:

A new cabin was placed on the Chelmsford tower. This new cabin is of modern construction and a big improvement over the former cabin.

3. Mt. Washington:

The contract was awarded for the construction of the Mt. Washington tower. This tower will be completed by mid-summer of 1972.

Twelve wooden bridges which were build by the C.C.C. in 1933 on the Leominster State Forest were replaced with culverts. The culverts were received from the Excess Property Program. The wooden bridges at the Douglas State Forest and two at the Spencer State Forest, which were also built by the C.C.C. were replaced. The timber used was cut from the Spencer Forest. Another bridge on the Sutton Forest was also replaced.

4. Lenox:

A contract was awarded and work has begun to replace the Hutchinson tower, which blew down in a violent wind storm two years ago.

5. Truck Replacement:

The twelve 1964 four wheel drive pick-ups were traded for twelve two-wheel-drives. It was the opinion that two-wheel-drive trucks would be satisfactory, since all the fire trucks are four-wheel-drive and could be used for other than fire work, if necessary, whereas, the pick-ups travel mostly on good roads, as they are used as auxiliary fire equipment. Three county patrol trucks were also replaced. The 1964's are now the oldest patrol trucks and these will be traded in 1972. A new chassis was purchased for the construction crew at Brimfield.

Emphasis Is On Training:

Considerable emphasis was placed in training the fire personnel and the state forest crews, this past year. In most districts, one day a week was set aside for equipment check and training. Because of lack of funds, the Bureau was unable to send trainees to the Northeastern Forest Fire Protection Compact training session this year. Some of the men went at their own expense. We hope that funds will be available to continue this training in future years.

A new Forest Fire Fighters Manual was distributed this year to the state and local fire officials. The manual was the result of seven years of work in Pennsylvania. The United States Forest Service improved on it, so the terms and instructions would apply to any state. This manual can be used in a classroom or in the field. Each District Fire Warden, local Fire Warden, local Fire Chief will receive one of these manuals. The rest will be kept to be used by instructors in classroom study.

Weather Stations Firmly Established:

The Bureau now operates a forest fire weather station in each district, but a new Forest Service Experimental Station has been placed in operation at the Goshen State Forest. Our personnel operate this station and forward the information to the U. S. Weather Bureau.

Personnel are Jacks-Of-All Trades:

Many of the fire personnel assisted in the River Study, Trail Study and Open Space Project. Also, the men assisted in cutting out many of the snowmobile trails. Considerable assistance was given on many other recreational projects, when the fire danger was low.

Law and Fire:

Seventy-two individuals were checked for violation of the fire permit law. In all cases, the offenders were told to put out the fire and given a warning slip. In another case, several individuals were summoned into court and found guilty. There were two violations of the slash law. In both instances, the violations were corrected.

FIRES (SIZE)

BY DISTRICTS

JULY 1, 1970 to JUNE 30, 1971

<u>DISTRICT</u>	<u>COUNTY</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>TOTAL</u>
1	Barnstable	256	40	2	-	-	298
2	Plymouth	380	161	11	1	-	553
3	Bristol	340	238	2	-	-	580
4	Norfolk	197	130	9	1	-	337
5	Essex	9	67	5	-	-	81
6	Upper Middlesex	252	230	3	-	-	485
7	Lower Worcester	61	169	11	1	-	242
8	Upper Worcester	228	138	3	-	-	369
9	Franklin	122	37	-	-	-	159
10	Hampshire	73	103	2	-	-	178
11	Hampden	-	78	3	-	-	81
12	Berkshire	23	30	-	-	-	53
14	Lower Middlesex	168	139	1	-	-	308

TOTALS:	2,109	1,560	52	3		3,724
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A fire is 0 to .25 acres

B fire is .269 to 10 acres

C fire is 119 to 100 acres

D fire is 101A to 300 acres

E fire is 301A to 1,000 acres

ACREAGE BY DISTRICTS

JULY 1, 1970 to JUNE 30, 1971

<u>DISTRICT</u>	A	B	C	D	E	TOTALS
1	47.50	54.05	35.00	-	-	136.55
2	94.75	207.25	282.00	165.00	-	749.00
3	82.40	307.00	60.00	-	-	449.40
4	42.40	268.30	223.00	175.00	-	708.70
5	2.25	96.75	110.00	-	-	209.00
6	63.00	306.25	54.00	-	-	423.25
7	15.25	275.50	215.00	110.00	-	615.75
8	34.65	213.75	36.00	-	-	284.40
9	13.15	59.25	-	-	-	72.40
10	18.25	97.25	29.00	-	-	144.50
11	-	177.75	130.50	-	-	308.25
12	5.75	60.25	-	-	-	66.00
14	42.80	174.50	15.00	-	-	232.30
TOTALS	462.15	2,297.85	1,189.50	450.00	-	4,399.50

SUMMARY BY CAUSES

JULY 1, 1970 to JUNE 30, 1971

<u>DISTRICT</u>	<u>Campers</u>	<u>Smokers</u>	<u>Debris</u>	<u>Incend</u>	<u>Misc.</u>	<u>Lightning</u>	<u>R.R.</u>	<u>Children</u>	<u>TOTAL</u>
1	4	32	20	33	91	-	-	118	298
2	5	44	75	70	113	2	-	244	553
3	3	46	153	21	132	-	31	194	580
4	7	9	18	94	12	-	2	195	337
5	16	5	3	6	29	-	-	22	81
6	5	8	59	40	95	-	24	254	485
7	2	5	40	99	3	-	26	67	242
8	6	26	99	63	50	-	44	81	369
9	2	13	25	5	4	22	78	10	159
10	3	16	28	61	18	14	37	1	178
11	20	1	7	1	23	-	1	28	81
12	3	4	4	1	10	1	5	25	53
14	2	34	29	120	36	3	57	27	308
TOTALS	78	243	560	614	616	42	305	1,266	3,724

ACRES BURNED (TYPE OF AREA)

JULY 1, 1970 to JUNE 30, 1971

DISTRICT	1	2	3	4	5	6	7	8	9	10	11	12	14	
COM. FOREST	-	408.75	59.95	292.30	26.25	30.50	495.75	2.00	33.85	41.50	83.00	24.75	3.75	1,502.35
NON-COM. FOREST	96.25	275.50	221.60	150.70	90.50	376.25	4.00	225.75	38.55	95.50	175.00	38.50	220.30	2,008.40
NON-FOREST	40.30	64.25	153.10	265.70	81.75	14.25	116.00	41.00	-	3.75	50.25	2.75	.25	833.35
NONFORESTED WATERSHED	-	.50	14.75	-	10.50	2.25	-	15.65	-	3.75	-	-	8.00	55.40
TOTALS	136.55	749.00	449.40	708.70	209.00	423.25	615.75	284.40	72.40	144.50	308.25	66.00	232.30	4,399.50

ACREAGE BY CAUSES

JULY 1, 1970 to JUNE 30, 1971

<u>MPERS</u>	<u>Smokers</u>	<u>Debris</u>	<u>Incend</u>	<u>Misc.</u>	<u>Lightning</u>	<u>R.R.</u>	<u>Children</u>	<u>TOTAL</u>
2.40	150.55	368.25	1,250.80	738.55	46.35	202.30	1,400.30	4,399.50

NO. OF FIRES BY RESPONSIBILITY

JULY 1, 1970 to JUNE 30, 1971

<u>Timber Opr.</u>	<u>Recreation</u>	<u>Other</u>	<u>R.R.</u>	<u>Landowner or Occ.</u>
--	16	-	305	489

DAMAGE OF LAND USE BY ACRES

JULY 1, 1970 to JUNE 30, 1971

<u>Timber Products</u>	<u>Watershed</u>	<u>Recreation</u>	<u>Wildlife</u>	<u>Real Property</u>	<u>Personal Property</u>	<u>TOTAL</u>
335.00	-	-	5,295.00	203.00	-	5,833.00

NO. OF FIRES (TYPE OF AREA)

JULY 1, 1971 to JUNE 30, 1971

<u>Com. Forest</u>	<u>Non-Com. Forest</u>	<u>Non-Forested Watershed</u>	<u>Non-Forest</u>	<u>TOTAL</u>
520	2,288	56	860	3,724

APPENDIX I

RAINFALL BY DISTRICTS

DISTRICT	<u>1970</u>				<u>1971</u>		
	JULY	AUGUST	SEPT	OCT	APRIL	MAY	JUNE
1	1.53	6.67	1.54	4.50	2.62	4.46	.36
2	1.54	6.37	1.49	4.67	3.43	6.32	.55
3	1.18	5.82	1.78	4.38	2.96	4.54	.54
4	1.33	3.49	1.62	4.20	1.47	3.49	.84
5	1.58	3.96	2.61	3.70	1.25	5.64	2.48
6	1.27	4.03	2.65	3.22	.69	3.62	3.60
7	1.40	5.77	2.16	1.96	.73	4.46	2.91
8	.96	1.62	2.27	2.90	.79	2.91	3.88
9	1.33	4.37	2.13	2.15	.06	3.94	2.81
10	.93	5.08	2.95	3.64	1.09	5.09	4.86
11	1.71	3.50	2.80	2.18	.77	2.97	1.55
12	1.40	3.71	3.41	2.85	3.76	6.42	2.50
13	1.89	7.31	2.95	3.17	.98	3.84	2.42

APPENDIX II

SUMMARY OF FIRES

BY DISTRICTS

JULY 1, 1970 to JUNE 30, 1971

<u>DISTRICT</u>	<u>NO. FIRES</u>	<u>ACRES</u>	<u>COST</u>
1	298	136.55	\$ 11,189.36
2	553	749.00	10,946.00
3	580	449.40	10,139.00
4	337	708.70	17,673.59
5	81	209.00	1,666.00
6	485	423.25	10,427.31
7	242	615.75	11,972.50
8	369	284.40	9,968.65
9	159	72.40	8,206.50
10	178	144.50	5,999.70
11	81	308.25	3,233.50
12	53	66.00	2,282.75
14	308	232.30	6,511.00
TOTALS	3,724	4,399.50	\$ 110,215.86

BUREAU OF RECREATION

GILBERT A. BLISS, CHIEF OF RECREATION

DAVID L. HALL, ASSISTANT CHIEF OF RECREATION

ROBERT F. SMITH, GENERAL SUPERVISOR OF RINKS AND POOLS

KENTON A. BEAUJEAN, GENERAL SUPERVISOR OF PUBLIC BEACHES

This past year has been one of attention to details pertaining to both current operational problems and future needs. Emphasis on public outdoor recreational needs has grown. The public demand for state action in a variety of forms has resulted in a busy, but fruitful year.

Major Resolve Studies Completed:

After months of preparation, two major resolve studies were completed and filed with the legislature on December 23, 1971.

The field study relative to a system of Wild, Scenic and Recreational Rivers was supervised by Lendrum Lee, Forester for Hampden County.

Recommendations for establishment of a Wild, Scenic and Recreational River System was made and legislation was filed with the study to implement this.

The field study relative to a system of Recreational Trails within the Commonwealth was supervised by Charles Dane, former Forester in Franklin County.

Recommendations relative to the establishment of a State-Wide Trails System being established and coordinated by the Public Access Board have been made. A recommendation relative to studying in detail the problem of landowner liability has also been made.

The joint legislative Committee on Natural Resources and Agriculture held hearings on House 4930 pertaining to a Recreational Trails System and House 4931 concerning a Wild, Scenic and Recreational Streams System, on February 24, 1971. A number of supporting statements were read into the record by several interested organizations.

State Forests And Parks:

Attendance Increases Point To Serious Problems:

Use of all recreational facilities continues to grow. This year has witnessed substantial attendance increases in all types of use.

Year-round activity now characterizes nearly all of our areas. Deficiencies in physical plant, which formerly were less apparent, are becoming alarmingly glaring. The quality span of recreational facilities offered the general public truly does range from the disgraceful to the elaborate. Much work is needed to upgrade many areas, which function as important recreational outlets.

Trail Scene Builds:

This year saw major emphasis on recreational trails for a variety of users and in a variety of locations.

Contact has been made with landowners along the Appalachian Trail relative to implementing the authority for it's protection as provided in Chapter 627 of the Acts of 1969. Forest Supervisor Douglas Lyman has been conducting most of this field work. Final details of the acquisition of various portions of the trail were discussed with the Appalachian Trail Conference at a November meeting.

The Massachusetts Trails Advisory Committee is becoming a valuable asset in regard to all facets of trail activity. Regular meetings were held monthly during the winter and spring culminating in a tour of the Northfield Pump Storage Project in June. Representatives of all trail user interests are represented in the fifteen member group. William Gearin, of Spencer, is the chairman for the current year.

S.O.A.R. Program Conducted at Wompatuck:

On Saturday, June 5, 1971, over 4,000 boy scouts representing the entire Old Colony Council conducted a work project. This was done as part of a weekend camporee held at Wompatuck State Park. The work project consisted of the initial steps in placing on the ground a trail system.

This system was the first, planned and established trail system designed to minimize user conflicts. Three types of trails were built; namely foot, bridal and recreational vehicle trails.

This project was conducted as part of the national 1971 scouting program, S.O.A.R., devoted to conservation activities. Although, the trail system was not complete, a major part of the placement was done and we have every indication that the planned system will function properly.

Cross State Trail Ride:

The first of what may eventually be a more commonplace event, took place from August 6, 1970 to August 20, 1970. A cross-state trail ride was co-sponsored by the Massachusetts Horseman's Council and this Department. The point of origin was in Hancock and the final destination was at Myles Standish State Forest, on August 20, 1970. Thirty-nine riders made the entire trip. About eighty rode on the final day to Myles Standish. Director Gullion saw the group off, in Hancock. Chief of Recreation, Gilbert Bliss, spent Saturday evening (August 15) with the group in Spencer, and also was present as the ride finished.

The ride was successful in focusing attention on the need for more long distance, multiple-use trails, in Massachusetts.

Wachusett Mountain Ski Area, Enjoying Good Season:

Early, lasting snow and good attendance have resulted in a successful season at the Wachusett Mountain Ski Area.

A new concept of making snow without the need for large amounts of compressed air was demonstrated at the area on February 11, 1971. The demonstration was conducted by the Hedco Corporation. The major advantage of this new approach is the elimination of large and costly air compressors, which are normally powered by diesel fuel or electricity. In Wachusett's case diesel fuel is used.

This new approach is very promising and although still in it's infancy, may well eventually provide a means of low cost snowmaking for all areas including the many small rope tow facilities sprinkled liberally throughout Massachusetts. The application could be a revolutionary step for sub-marginal ski areas.

Some problems on the west lift at Wachusett have developed. This problem which is not completely diagnosed has resulted in some shutdown

time and operation with a reduced number of T bars in use. Engineering studies are being conducted to determine a solution which must be implemented this next summer.

HANDICAPPED USE OF RECREATION AREAS:

David Hall, Assistant Chief of Recreation represented the D.N.R. at a meeting on March 18, 1971, pertaining to an AD-HOC Committee established by Governor Sargent on the use of state recreational facilities by the handicapped. Mr. Frank Robinson of Northeastern University is chairman of the Committee and various individuals from the U.C.S., Easter Seal Society, M.D.C. and D.N.R., plus two physically handicapped persons served as members.

Discussion pertained to representatives from M.D.C. and D.N.R. explaining that there are numerous state recreation areas now suited for use by handicapped and all future facilities will be so designed. A major drawback at the present time seems to be the comfort stations. The older facilities are not ramped for wheel chairs and the toilet stalls are not large enough.

Also, it was felt that recreation areas presently suitable for the handicapped should be so identified in brochures and signs at the entrances with the National Handicap Symbol being used.

Visits to various state facilities by the two physically handicapped members are planned for the near future in the hope that state officials can correct problems only these people can point out.

An experimental campsite for use by the handicapped is being considered for trial at Massasoit State Park, in cooperation with this committee.

Skating Rinks And Swimming Pools:

Staffing in the Boston Office for the growing rinks and pools program was accomplished this past year with the appointment of Robert Smith to the position of Supervisor of Rinks and Pools and John Harvey and Nap Alaire to the positions of District Supervisor of Rinks and Pools.

Business at the established skating rinks showed a steady growth during the past year. Brockton business was up 23%, Springfield 25% and Worcester an amazing 53%. Attendance kept pace as Brockton set a new attendance record with 192,124 people using the facility.

More and more High School and College programs sought use of the State Skating Rinks this past year. In Worcester, this resulted in the weekly excitement of sell-out games complete with radio and T.V. coverage.

Attendance was also good (as high as 800) for High School and Amateur games in Greenfield where many people were getting their first taste of the sport of ice hockey.

All five rinks were represented in the second annual Department of Natural Resources Youth Hockey Tournament held April 10 and 11 at the Worcester Rink. The host rink produced the champions in both divisions as their Hudson Pee Wees defeated Van Horn of Springfield in the finals, while the Hudson Bantams defeated Randolph, which represented Brockton.

New construction is underway at rink sites in New Bedford, Peabody and Haverhill; while Marlboro and Taunton are ready for bidding. Awaiting their turn are seven additional rinks and ten swimming pools.

Besides their regular business, several of the rinks and all of the pools did a little extra for the Communities in which they are located. The pools provide an invaluable Community service with their daily "learn to swim" program which is free to those who want it. At the Brockton and Worcester Rinks, time was set aside for the use of Special Children. Physical Education classes of the nearby High Schools made use of the Greenfield Rink and the Westfield Pool. The North Adams Rink started their season by playing host to an amateur ice show as part of their areas annual fall festival.

A regulation calling for the mandatory use of helmets during hockey games and practices for all patrons was enforced at all D.N.R. rinks this past year and the public's acceptance of this sensible regulation was gratifying.

Ocean Beaches:

The management of ocean beaches, which was assigned to us as a result of legislative action, has become a severe test of our ability to provide quality recreational experiences to large numbers of people in relatively concentrated areas. The four ocean beach areas are plagued by various problems involving physical plant, personnel and administrative matters. We certainly, at this point, cannot relate any outstanding success stories. We can, however, show some basic improvements and plans, which should bear substantial future benefits. As is true of all problems, an opportunity side does exist to provide outstanding recreation for Massachusetts citizens and visitors. We feel we are on the right track.

Some features of the past fiscal year follow:

Salisbury Beach State Reservation:

The whole Division management program at Salisbury was reviewed in detail by Director Gullion, Chief of Recreation, Gilbert Bliss, Supervisor of Beaches, Robert Smith and Regional Supervisor, Robert Hebb, on July 7, 1970. There are many problems both with the physical plant and the management and performance of personnel at this area.

Problems in the sewage ejector system, at the Salisbury Beach Campground, necessitated the limiting use to a 200 ~~maximum~~ of the 500 sites normally in service. This situation continued until August 5, 1970, when the replacement parts were finally received and installed.

During this period, a chronic problem involving long term camping was dealt with. The parties involved finally left the reservation after considerable argument. It is hoped that this initial confrontation will result in an absence of this problem in future years.

Chief of Recreation, Gilbert Bliss attended a meeting with the Salisbury Board of Selectmen on March 15, 1971, relative to plans for police protection during the coming season.

The State Police are planning to discontinue operation of their seasonal barracks at Salisbury Beach and have requested the cooperation of this Department in establishing some limited operations out of our Salisbury Headquarters.

The firm of Alozo B. Reed, Inc., was retained to study various physical problems at this area. Improvement to the camping area comfort station, water service and hot water system was done in May of this year. Major improvement work is slated for the fall of 1971.

Scusset Beach State Reservation:

Meetings were held with Corps of Engineers personnel, Engineering Consultant Andrew Christo, and the Department of Public Works relative to preparations for a three stage development plan for establishment of a camping area at Scusset Beach. Also, to be included are maintenance headquarters and a contact station. Cost sharing has been approved from Federal Land and Water Conservation Fund sources. It is planned to initiate this work in the fall of 1971.

Ice damage along the Cape Cod Canal was severe this past winter. The fishing pier at Scusset was partially closed, due to destruction by ice of a three pile cluster on the west end of the structure. A contract was awarded to repair this damage.

Negotiations have been conducted with the Corps of Engineers relative

to formulating a 25 year lease for recreational and natural resource management of the Scusset area.

Horseneck Beach State Reservation:

A camping area is being designed for construction in the summer and fall of 1971. This camping area will be located on a portion of the third parking lot, which is only used on peak capacity days.

The use of Gooseberry Neck for overnight camping has been discontinued after numerous encounters with the people who had been using the area. A parking area on the north end of the Island is maintained to allow passive use of this unique area.

SUMMARY OF REVENUE

	<u>DAY USE</u>	<u>CAMPING</u>	<u>OTHER</u>	<u>TOTAL</u>
OCEAN BEACHES	191,251.50	76,674.00	36,000.04	303,925.54
RINKS	360,201.90	---	41,079.92	401,281.82
POOLS	28,403.95	---	1,639.34	30,043.29
FORESTS & PARKS	298,884.65	453,341.50	50,844.76	803,070.91
TOTAL	878,742.00	530,015.50	129,564.06	1,538,321.56

BEACHES

AREA	PARKING	WALK- INS	SEASON PASSES	CAMPSITES & CABINS	BATH- HOUSE	CON- CESSIONS	BASKETS	COIN LOCKS	MISC.	TOTALS
Calisbary	39500.00		5760.00	76674.00	69.75	10360.00		391.30	389.38	133144.43
Fort Phoenix	3211.00	431.00	2400.00		12.00	630.00			95.14	6779.14
Forseneck	112375.00	32.50	8740.00		871.00	20586.00		1109.99	131.13	143845.62
Seusset	17622.00		1180.00		112.25	1000.00		242.10		20156.35
TOTALS	172708.00	463.50	18080.00	76674.00	1065.00	32576.00		1743.39	615.65	303925.54

SKATING RINKS & POOLS

RINKS

AREA	CHIL- DREN	ADULTS	CHIL- DREN E.W.&H.	RECEIPTS	WALK INS	LOCK- ERS	SKATE CONC.	FOOD CONC.	MISC.	GROUP	SPEC.	TOTALS
Brockton	3238.25	10600.75	15214.50	95182.65		524.92	778.65	3727.25		54.00	3955.57	133414.5
Greenfield	1831.75	5514.75	4441.50	37600.00	192.00	339.40	241.20	1186.58	105.14	300.00	2452.99	54205.3
North Adams	645.25	5048.25	5297.00	9350.00	69.00	275.80	719.24	640.76		152.00	245.75	22443.0
Springfield	725.75	7448.25	8915.00	62269.50	95.50	626.80	986.12	2908.24	121.45		2501.10	86597.7
Worcester	2059.75	10286.25	9641.00	63829.00	548.25	1281.00	1236.31	1233.95	105.70	38.00	14362.00	104621.2
TOTALS	8650.75	38906.25	43509.00	268231.15	904.75	3027.92	3961.52	9696.78	332.29	544.00	23497.41	401281.8

POOLS

AREA	CHILDREN	ADULTS	POOL PASSES	CONC.	MISC.	TOTALS
Greenburg	1872.15	225.50	2101.00		15.20	4243.85
Holyoke	3360.45	1162.00	746.00	200.00	28.84	5506.29
Milford	2032.50	624.50	414.00	440.00		3511.00
North Hadley	2402.55	1237.50	1258.00	610.00	6.66	5514.71
Westfield	3617.40	912.75	895.00	310.00	28.64	5763.79
Worcester	3053.65	1321.00	1124.00			5503.65
TOTALS	16352.70	5513.25	6538.00	1560.00	79.34	30043.29

1971 FISCAL YEAR REVENUE

AREA	PARKING FEES	WALK IN FEES	SEASON PASSES	CAMPSITE & CABIN RENTALS	OTHER RENTALS	CON- CES- SIONS	BINO- CULAR MACH.	OTHER SALES	MISC.	TOTALS
Ames Nowell	1029.00		80.00						163.96	1272.96
Ashland	5880.00	16.00	1800.00			185.00			12.55	7893.55
Ashmere Lake								504.00		504.00
Beartown Forest	2900.00	13.25	1160.00	2585.00	2500.00			(cottages)	13.61	9171.86
Braceley Palmer	4750.00	6.25	550.00		1143.00	H.R.			50.00	6499.25
Buffumville	1600.00	15.00	580.00			15.00				2210.00
Chester Gardner	900.00	26.00	70.00							996.00
Chicopee	10050.00	202.50	3530.00							14103.26
Clarksburg	3100.00	12.50	1820.00	3996.00					20.00	9249.74
Cockscuate	25100.00	346.25	13070.00					1664.00	23.97	41454.22
Cokasset								(Pier Permits)		
D.A.R.	2768.00		1100.00	4173.00					5.00	1239.00
Dean Pond	3200.00		560.00			25.00				8071.00
Demarest Lloyd	6100.00	3.50	1210.00			101.15				3861.15
Dennison Lake	4065.00		2220.00	12192.00		20.00				7333.50
Dighton Rock	750.00		70.00			55.00				18533.00
Douglas	9300.00		1710.00			10.00				830.00
Erving	6800.00	55.75	2830.00	3736.00		160.00				11010.00
Federation	74.00		10.00							13581.75
Freetown	1800.00		380.00							84.00
Gradyville	1116.00		70.00	4756.00		10.00				2190.00
Hampton Pond	9800.00	1232.95	2450.00			250.00			4.29	13737.24
Harold Parker	7950.00	137.50	1150.00	34926.00		50.00			97.55	44311.05
Holland Pond	4548.00	7.70	1630.00						151.10	6336.80
Strawter Rd. Beach						105.26				105.26
Hopkington	20950.00	18.50	13630.00		155.00	325.00		48.00	.50	34817.00
					(stolen 7/19/70)			(Pier Permits)		

AREA	PARKING FEES	WALK IN FEES	SEASON PASSES	CAMPSITE & CABIN RENTALS	OTHER RENTALS	CON- CES- SIONS	BINO- CULAR MACH.	OTHER SALES	MISC.	TOTALS
Lemell Dracut	22.00				200.00			5001.00		22.00
Robert's Beach	5753.00		13.75	2390.00	(Rent)	1600.00		(Sale Of Land)		5201.00
Iedminster	969.00			38248.50		218.00		2533.00	1.00	9756.75
Massasoit	2500.00			10230.00				(Cranberry Crop)	.50	41969.50
Mohawk Trail	614.00			20.00						12930.30
Mount Grace	597.00			10.00	3250.00	275.00	192.24	196.00 (wood)		634.00
Mount Greylock					708.00(H.R.)			989.04(to close out		7321.24
Mount Wachusett								ski area fund)		1697.04
Myles Standish	18714.00			350.00	584.00	556.80		140.28	225.22	107534.02
Nickerson	16317.00			30.00	(H.R.)	1220.00		(cottages)	494.77	142337.77
October Mountain	791.00				7256.00				11.85	8058.65
Otter River					888.00(H.R.)					888.00
Parson Property	2600.00			130.00		20.10			1.00	6418.10
Pittsfield	1600.00		677.25	290.00	225.00	225.00		1775.00	1.00	4793.25
Quinsigamond (Lake Park)								(Tennis Tickets)		
Quinsigamond (Regatta Point)	1500.00	737.50		860.00	611.50					3709.00
Robinson	4300.00			4160.00		51.10				5511.10
Roland	6400.00			2640.00		80.00				9120.00
Salisfield	1600.00	5.50		630.00					51.00	2286.50
Sawary Mountain	1645.00	3.75		350.00	10224.00					
St. James Crowell	262.00			10.00	65363.00				120.93	12222.75
Stanner	3700.00			800.00						65755.93
St. Andrew	743.00			10.00						40.00
Standish Monument					40.00					4500.00
							184.04	87.11	114.05	1143.20
								(Mon.Ass.)(Inc. from		
								Trust Fund)		
Tolland	3650.00		12.50	270.00	21051.00	55.00			2.00	25040.50
O. Reservoir								144.00		144.00
W. Reservoir	4300.00		5.00	1000.00		50.00		(Pier Permits)		5355.00
Wells	127.00				14172.00					15445.00
Wells	522.00			150.00						676.00
W. Brook	8600.00	37.50		1550.00	6913.00				35.04	17437.54
Pearl Hill	2822.00	25.00		1350.00	7540.00				47.32	11754.32
W. Hill	1600.00			270.00	1660.00					3530.00

AREA	PARKING FEES	WALK IN FEES	SEASON PASSES	CAMPSITE & CABIN RENTALS	OTHER RENT- ALS	CON- CES- SIONS	BINO- CULAR MACH.	OTHER SALES	MISC.	TOTALS
Arren H. Manning	806.00		190.00							1009.25
Office			180.00							180.00
ary Duty					1750.00				1048.00	1048.00
ental of Land										1750.00
(Piske Hall property)										
ccident Settlement for									225.00	225.00
31584										
arge for Canadian Checks								4.59		4.59
o correct entry 5/15/70								315.00		315.00
ad Checks								53.00		53.00
TOTALS	228740.00	3624.65	60520.00	453341.50	13135.50	7689.41	376.28	26969.15	2674.42	803070.91

BUREAU OF INSECT PEST CONTROL

CHARLES S. HOOD - CHIEF

On a Collision Course

Two major concerns in this day and age are meeting head on and the outcome has not yet been resolved. Justifiable concern has been voiced by certain individuals and groups regarding certain uses of certain pesticides. This has been reflected in various actions of the Massachusetts Pesticide Board in restricting the use of these pesticides.

On the other hand Massachusetts has been beset by insect outbreaks of major proportions and many outbreaks of minor proportions during the past few years. These too, are of major concern to residents of the Commonwealth. There are very few things more discouraging and more awesome than to watch ones tree or trees being, slowly at first, and then suddenly swiftly devoured by hordes of insects. Equally as heart breaking is the knowledge that ones tree has a disease from which it may never recover.

Discounting the hysteria and fear evoked on both sides of the question and viewing the total situation rationally one finds much that needs doing. There must be approaches that can satisfy both extremes. If these approaches develop as a result of this collision we will all benefit. The Department of Natural Resources is the State agency most concerned with the environment. The impact of any pest outbreak on the total environment must be weighed against the possible damage a control measure may incur on this same environment. At times the decision is not an easy one to make.

Major Outbreaks

As long as trees are grown there will be pests on those trees. This year was no exception. In certain areas the oak and pine have been severely attacked by the gypsy moth. The sugar maple, birch and beech has been under attack from the saddled prominent. The pitch pines in southeastern Massachusetts and Cape Cod have suffered from three different insect pests - the pine needle miner, the Nantucket pine tip moth and the pine looper. Red oaks, and to some extent white oaks, in eastern Massachusetts have been defoliated by the oak leaf skeletonizer. Although there is no significant difference in intensity this year over past years the Dutch elm disease continues to take its toll of elms throughout the State. Beech continues to die as a result of the combined attack of the beech scale and the necrotia disease.

Insect and Disease Highlights

Gypsy Moth

The aerial survey, conducted in July of 1970, to determine the current defoliation by the gypsy moth indicated signs of a rise in the extent of infestations during the next few years. Areas of the State that in the past have sustained serious outbreaks now show visible areas of defoliation again. Total defoliation was in the vicinity of 7,500 acres.

If we can judge by past history Massachusetts is due, within the next year or two, for an outbreak of major proportions. The last general outbreak ended in 1964. Normally, outbreaks reoccur every seven or eight years.

In the fall of 1970 those communities, particularly those on Cape Cod, which showed defoliation were carefully surveyed on the ground for egg masses. Bureau personnel assisted in this work. During this same period Nickerson State Park was also surveyed. Much of the park showed egg mass counts of 20,000 or more egg masses per acre. It should be noted here that 400 to 500 egg masses per acre in growth such as can be found in Nickerson will result in complete defoliation during the next summer.

Plans were formulated during the winter to aerially spray the park during the following spring. The decision was made to spray at the rate of one pound of Sevin per acre by means of helicopter. The proposal was accepted by the Pesticide Board and proposals to bid were sent to helicopter applicators licensed to work in Massachusetts. No replies to the proposal were received. The experience of last year ruled out the possibility of satisfactory control by means of ground equipment. The park was to remain open despite the known population of gypsy moth.

The decision to remain open was cause for great concern to the Plant Protection Division of the U. S. Department of Agriculture. This agency is charged with the responsibility for preventing the spread of the pest to areas of the United States and Canada not now infested with the moth. Camping trailers and camping equipment in general make ideal vehicles for the inadvertent transportation. Large larvae, pupae and egg masses are often found on or under such things.

The suggestion was made by the Federal agency that it contract for the application of Gardona, an organophosphate registered for this use. Application at the rate of one pound per acre was made on June 15 and 17, 1971. The project was only moderately successful. There would seem to be two major reasons for

this: (1) the enormous population of gypsy moth present on the area and (2) the lateness of the spray in relation to the larval development. The end result was the decision to close Areas 6, 6A and 7 until August 1, 1971 at which time the hazard will have subsided. It is quite evident at this writing that we will be confronted with the same problems next year at Nickerson.

New approaches to the control of gypsy moth are being attempted by the Federal Government in cooperation with various state agencies. Two of these cooperative tests are being conducted in Massachusetts assisted by this Bureau. The first of these is the application of various strengths of *Bacillus thuringiensis* by mist blower. The results have not been finalized at this writing. The second is the application of the synthetic gypsy moth sex attractant, Disparlure, to two hundred acres of gypsy moth infested woodland in the vicinity of the Quabbin Reservoir. Again the Bureau is cooperating. The aim of this particular project is one of confusing the male moths and preventing mating. Results should be evident this coming fall.

Saddled Prominent

For the third year this insect defoliated vast acreages of Berkshire County with some activity noted in Hampden, Hampshire and Franklin Counties. The total acreage of visible defoliation recorded by an aerial survey was 105,000 acres. This was a slight increase over the total defoliation of last year.

Inasmuch as this has been an areawide problem Bureau personnel have cooperated and worked with U. S. Forest Service entomologists and entomologists from the Applied Forestry Research Institute of Syracuse University in an attempt to better understand the habits and behavior of this insect. The clue as to how to predict population numbers a year in advance still eludes us.

A clue as to the reason for the eventual collapse of a saddled prominent outbreak may have come to light this year. During the last two weeks of June millions of saddled prominent moths were observed flying. Upon investigation it was found that they were all male moths. There may be something that genetically triggers this phenomenon which reduces the population to an endemic state where it remains for a period of years.

Oak Leaf Skeletonizer

Activity of this insect was reported from all sections of the State where oak grows in abundance. Eastern Massachusetts was more heavily hit than other areas.

Biological Control

The *Bacillus thuringiensis* experiment was carried out in Whately under the direction of Dr. Franklin Lewis of the Forest Insect and Disease Experiment Station of the U. S. Forest Service. Cooperators were the Department of Entomology, University of Massachusetts and the Bureau of Insect Pest Control.

Three forest plots of about one acre each were sprayed with various formulations of Bt by members of the Bureau with a Bureau mist blower. The applications were repeated three times.

Larval counts were taken following each of the applications. The method used was one which would lend itself to the peculiarities of the gypsy moth. During the day, gypsy moth larvae tend to seek out niches in which to find shelter. An artificial shelter was provided by wrapping burlap around the test trees. The simple procedure of counting the dead and alive larvae under the burlap would give a relative indication of the efficacy of the spray material.

Egg mass counts in the test plots compared to egg mass counts in check plots taken later this fall should give us the final determination as to the ability of Bt to control gypsy moth.

Pheromones

The use of pheromones (sex attractants) in the control of insect pests has received wide publicity in recent months. The theory appears to be sound although practical application has not, as yet, been demonstrated.

Recently, the gypsy moth sex lure has been synthesized and a sufficient quantity produced to conduct field trials. Massachusetts was chosen as one of the areas in which pilot tests would be held. Through cooperation of the Metropolitan District Commission and with the sanction of the Department of Public Health, the Bureau in conjunction with the Plant Protection Division of the U.S.D.A. treated two hundred acres of gypsy moth infested area on the Quabbin Reservoir.

The application was made by dispensing small particles of cork impregnated with Disparlure from an airplane when most of the gypsy moth were in the pupal stage just prior to emergence as moths.

At this writing the only fact known was the observation that male moth confusion reigned supreme. Whether this will have had any lasting effect on the resident population can only be determined by egg mass counts this fall.

During the past year the question arose as to the amount of damage being inflicted on the oaks by this pest. Some trees were almost completely defoliated by July 1. These trees did not refoliate during the remainder of the year. Apparently the defoliation had little effect on the trees as most put out a set of leaves this year.

The spring of 1971 saw a continuation of the outbreak of this pest in some areas and a lessening of intensity in other areas. It would appear that this may be the last year for this particular outbreak except for a few localized exceptions.

Nantucket Pine Tip Moth

This pest which has killed thousands of pitch pines on Cape Cod appears to be still on a rampage although somewhat of less intensity than the past few years. Thanks to the efforts of the Waltham Field Station owners of particularly valuable trees are now able to control the pest.

Pine Looper

During last September reports began to filter into the Boston office of the browned condition of the pitch pines in the Eastham - Wellfleet area of the Cape. It was soon determined that the pine looper was again on the upsurge. The last major outbreak of this pest was in 1960 and 1961. The outbreak then collapsed due to a virus disease.

Mid June of this year saw much moth activity in Plymouth. It is expected that during late summer of 1971 evidence of this insect will be noticeable throughout the pitch pine areas of southeastern Massachusetts.

On the recommendation of this Bureau the Department of Public Works will spray with ground equipment approximately twelve miles of the Mid - Cape Highway in Wellfleet and Eastham for control of the pest on its right of way.

Dutch Elm Disease

Although it is an old story it is still with us and causing a considerable amount of elm mortality throughout the State. During the calendar year 1970 there were 7,810 samples of elms suspected of having the disease cultered and confirmed as having the disease. This is a fifteen percent increase over the previous year. At the time of this writing it appears to be running ahead of last years figures.

Despite the apparent failure to control the disease it is being controlled through the combined efforts of the cities and towns and this Bureau. The efforts at sanitation and the supplemental spraying by communities are holding losses to a low percentage.

Bureau personnel, particularly the Tree Removal Crews, continue to assist deserving cities and towns in the work of removal and destruction of diseased elms.

Oak Leaf Roller

This is an insect which has caused severe mortality in stands of oak in Pennsylvania and New Jersey. Here in Massachusetts two relatively small areas have sustained outbreaks of this insect for the past two years. One of these is in the town of Mount Washington and the other in the town of Plymouth. No permanent damage has been noted as yet.

Hemlock Looper

A close relative of the pine looper, the hemlock looper, has built up to outbreak proportions in southeastern Massachusetts. It has been particularly destructive in stands of hemlock on the Fall River watershed.

This insect feeds in late summer and early fall on the needles of hemlock. The hemlock is a tree which rarely recovers from a complete defoliation. Observations last fall led to the recommendation that an immediate salvage cut be conducted on the area. This has been done.

Because of the concern voiced by those in charge of this watershed the Bureau was asked for control recommendations. Knowing that the insect had previously been controlled through the use of Malathion this was recommended. The proposal was submitted to the Department of Public Health for consideration inasmuch as it closely involved drinking water. It was given a go ahead by that Department. The application will be made in mid - August.

Excerpts from District Supervisor Reports

District #1

Eight towns on the Cape who had combined their financial resources to apply "Sevin" by aerial application cancelled their plans to spray, although the material was applied by ground method. The results were fair.

Isolated infestations of the brown tail moth were noted in Dennis, Barnstable and Truro (National Seashore Park). Clipping of winter nests and natural shifting of sand keeps this insect under control.

Some evidence of wood ticks in most towns in the District. Control measures are carried out for this insect annually in all towns by the local superintendents.

District #2

Small amount of spiny elm caterpillar found in the District.

There was a great deal more of the eastern tent caterpillar this year and there was much more of the forest tent caterpillar.

Gypsy moth is increasing in areas infested and it appears that in 1972 we will have more of it.

District #3

Several towns have a wood tick problem. The oak leaf skeletonizer has caused a great concern to most towns in District #3.

A fall webworm infestation was heavy in the Newbury and Newburyport area.

District #4

Several attempts to control the pine leaf aphid at Pearl Hill left much to be desired. During the winter of 1970 and 1971 all the spruce in the area were removed in an attempt to break the life cycle by the removal of the alternate host.

Oak leaf skeletonizer caused the greatest concern - especially in eastern Middlesex County.

May and June of 1971 showed an increase in gypsy moth larvae in Western Middlesex County.

Dutch elm disease still seems to be taking second place to the dying maples and pines along the roadsides.

Twelve days were spent picking up and delivering pesticides to be stored in the bunkers in Cohasset.

District #5

Gypsy moth populations are beginning to build up in certain areas of Douglas, Sutton and Oxford.

The fall webworm was extremely heavy in October all throughout Sutton, Millbury and Oxford.

White pine weevils are presently doing extensive damage to a Norway spruce planting around the reservoir property in Leicester.

Maple decline is taking more and more roadside trees annually.

The Dutch elm disease problem saw a definite increase in the number of afflicted trees throughout Southern Worcester County.

District #6

We assisted in tree removal in the forest and parks recreation areas in Districts 5, 6 and 7. A total of 165 trees were removed in State parks and other departments.

Light defoliation from the elm leaf beetle was noted in some towns in Northern Worcester County.

Worked with the U. S. Forest Service and the University of Massachusetts on an experimental spray project spraying test plots with *Bacillus thuringiensis* for control of the gypsy moth.

District #7

The saddled prominent was on the rampage again in this District. A total of 3,752 acres were defoliated in Hampden County and a total of 7,290 acres were defoliated in Hampshire County.

There was quite an increase in gypsy moth activity this year. An extensive area around Peaked Mt. in the towns of Monson and Hampden were severely infested with gypsy moth. It is suspected that most of these caterpillars were blown in from Connecticut due to the lack of sufficient egg masses in the area.

District #8

Dutch elm disease continues to be the number one problem in Berkshire County. Thousands of trees have died in the last year. No inroads can be made on this problem until cities and towns get totally involved on private property.

The beech scale and nectria canker complex continues to take its toll on American beech trees. Defoliation by the saddled prominent caterpillar has hastened the onslaught.

The green striped mapleworm this year is reported all over the County.

There is a good population of maple trumpet skeletonizer in the northern half of the County.

Small, localized outbreaks of gypsy moths in two public and three private camp grounds in Southern Berkshire County.

Last year saw 1300 acres of defoliation in Mount Washington from oak leaf rollers. The area shows some crown deterioration and old mortality from a previous outbreak.

There were a few cases of elm spanworm in the Great Barrington, Sanford and Egremont area.

Aquatic Weed Control

The Department is continuing in its effort to bring the aquatic weeds and algae under control in the various bodies of water for which it is responsible.

Areas treated last year were Lake Cochituate for control of algae, Watson Pond in Taunton was treated for weeds and algae, the swimming area at Hopkinton State Park was treated for weeds and algae, Stearns Pond in North Andover was treated for weeds, Dean Pond in Monson was treated for weeds, Big Bear Hole in Taunton was treated for weeds and algae and Middle Pond in Taunton was treated for algae.

All treatments were successful bringing the Department closer to the time when all of the bodies of water will be on a maintenance basis and not a crisis basis.

Pesticide Storage

Pesticides are still being received from time to time for storage in the bunkers at Wampatuck State Park. At the present time there are approximately 133 tons of various formulations, both liquid and powder, stored in three of the bunkers.

Deterioration of the pesticide containers will give cause for some concern in the near future. All precautions are being taken to prevent leakage, etc but the age of some of the containers may cause problems.

Those personnel who must enter the bunkers for one reason or another have been supplied with the best respirators available.

Hazardous Trees

It came to the attention of the Bureau last year that there was the possibility that on our various parks and recreation areas might be dead or unhealthy trees. These trees could pose a hazard to those camping or picnicking under them due to falling limbs and branches.

Last fall each recreation area across the State was surveyed by Bureau personnel in the company of Recreation personnel to determine the location of any of these hazardous trees. A number of these were found and the hazardous removed by either park personnel or the Bureau tree removal crews.

Summary

As far as Bureau activity is concerned the past year has been one of rising insect populations and rising concern for the environment. Such things as saddled prominent, gypsy moth, pine looper, oak leaf skeletonizer and Nantucket pine tip moth have chewed their way through thousands of acres of trees. At the same time some of the better tools from the viewpoint of the applicator have been questioned as possibly toxic to other living forms.

On the one hand we find the environment being altered by tree insects and disease and on the other hand people stating that to control these pests is to help destroy the environment. Someday the question will be resolved. Until that time the judgement of those charged with protecting all of these interests must prevail and that judgement must be good.

BUREAU OF FOREST DEVELOPMENT

JOHN H. LAMBERT - CHIEF FORESTER

Forestry Highlights:

Education & Training:

James Toffling, Forester for Northern Worcester County helped plan and coordinate a Division-wide in-service training program on orientation, as to the various Division functions. This was not only given in each Region, but also to the office personnel.

Foresters in Berkshire County conducted a forest landowner workshop on forest improvement.

A number of our foresters attended a "Symposium on Trees and Forests in an Urbanizing Environment" at the University of Massachusetts.

Region #4 foresters were deeply involved with a conservation workshop conducted at the Hawley State Forest.

Region #3 foresters were again part of the training team for the Massachusetts Conservation Camp held on the N. Spencer State Forest.

Most of the foresters were involved with various Boy Scout conservation projects through the year, the outstanding project being the supervision of some 5,000 Boy Scouts making trails on Wompatuck State Park on June 5, 1971.

Besides numerous forestry talks to high schools one of the foresters gave a lecture to the Park Management course students at the University of Massachusetts.

Forester Parker in southern Worcester County has spent considerable time in planning layout and conducting conservation education projects at the Buck Hill Conservation Area in Spencer.

X Foresters Work On Legislative Studies And Reports:

A legislative study, House #4931 of the scenic and recreational streams in Massachusetts was compiled by Forester, L. Lee after the facts were gathered by the foresters and other Division personnel.

X A companion study, House #4930 requested by the legislature involved a compilation of all kinds of trails in Massachusetts. Facts were gathered by Division personnel and the report written by Forester, Charles Dane.

X The foresters devoted considerable time gathering facts for the Division of Conservation Services on the Open Space and Outdoor Recreation Inventory of Massachusetts required by B.O.R.

Several foresters have been involved in making Environmental Impact reports for this Department, which is required in regard to the building of State & Federal highways by the Department of Public Works. Highway routes numbers 2, 23, 25, 52 I-95 and I-391 have been reported on.

An updating of a Directory of Massachusetts Sawmills and Loggers was checked and corrected by the foresters, and then published by the Cooperative Extension Service.

An Ecological Study of Mt. Tom County Reservation was made by Forester, William Rivers.

Interest In Champion Trees And Natural Areas:

Following correspondence with the Yankee magazine on whether New Hampshire or Massachusetts had the biggest tree of several native species the Division started a campaign to find out where the largest trees of each native species were to be found. A partially complete listing of known large trees in Massachusetts was publicized. It was climaxed by an Arbor Day measuring by Commissioner Arthur W. Brownell of the largest American Beech (20'6" circumference) in the United States. The Beech had been found in Jamaica Plain. We have found a great deal of interest in looking for Massachusetts Champion and Town Champion trees.

The great hue and cry about the destruction and pollution of the environment has created a desire to save remnants of virgin forest types and plant associations. A start has been made in listing and setting aside as Natural Areas good specimen areas on our State Forest & Parks. A particular good one is the virgin Northern Hardwoods type on the Mohawk Trail State Forest. In addition, we have set it aside as an ecological area. We are in the process of acquiring a virgin Atlantic White Cedar swamp in Freetown, which will be used, in part, for the same purpose.

Wooden Highway Posts Better Than Steel:

Charles Garckell of the U. S. Forest Service road research center at Princeton, West Virginia proved very convincingly with charts, stop motion movies and slides that wooden highway posts stood up better with less damage to the posts and vehicles than steel posts. This proof was given in an illustrated talk given before state highway engineers, utilization foresters and post industry people at a meeting in Boston on March 24th. This meeting was organized by Ed Sprague, Wood Utilization Specialist of the U. S. Forest

Service to try to convince state public works departments to use local woods for highway posts. The two local woods tested were Red Pine and Red Oak. It is hoped Massachusetts will change to wooden posts as it was shown that wood can be driven in rocky ground with less damage at equal cost, where steel posts will curl.

Town Forests & Conservation Commissions Asking For Environmental Advice:

This year, many Town Forest committees and Conservations Commissions have asked our foresters to look over their land areas and advise them how to plan and carry out the care and maintenance to improve the aesthetics and health of their forests, so as to make a better environment. We have also helped in the marketing of wood products in some cases.

The foresters have been involved with team Resource Inventory Reports for a number of towns. These teams are composed of foresters from this Division, Soil experts from the U. S. Soil Conservation Service and Wildlife specialists from the Massachusetts Division of Fisheries and Game.

Massachusetts Forest Resources Being Reinventoried:

After many problems and delays, Massachusetts was flown and photographed in the late summer and early fall of 1970, under contract by the U. S. Agricultural Stabilization and Conservation Service at a scale of 1:40,000. The U. S. Forest Service and our foresters have tested these photos and found them satisfactory for reinventory purposes. The U. S. Forest Service Team has been set up in Amherst to begin to gather data for a new forest resource inventory of the Commonwealth. The last was done in 1953.

Service To Private Woodland Owners:

Massachusetts and U. S. Forest Service Cooperative Forest Management Program

Massachusetts G.L., Chapter 132, Sec. 6 and U.S. C.F.M. Acts 1950

P.L. 81 - 729

Foresters have again serviced approximately 10% of the forest landowners with forestry advice and demonstrations, as to how best to treat their land to improve the environment for one forest use or another. (See Chart)

Christmas tree plantation care and maintenance demonstrations were one type of service, which has been quite practical and popular for high value land.

Fish and Game Clubs owning considerable forest land have been the site

of excellent multiple use forest management demonstrations. A good example is as follows:

Townsend Rod & Gun Club:

Who Participated

Townsend Road & Gun Club, Massachusetts Department of Fisheries & Game, Soil Conservation Services, Massachusetts Department of Natural Resources, Middlesex County Extension Service and the University of Massachusetts Extension Service.

Where It Was Done

Townsend Rod & Gun Club off Emory Road, Townsend, Middlesex County, Massachusetts.

When It Was Done

After preparation of three full days time on Saturday, May 15, 1971.

Why It Was Done

The Club members on the conservation committee were active tree farmers on their own lands and were instrumental in furthering forest land management practices on the Rod & Gun Club land. 1) They had requested a field meeting on the club lands to show other clubs that they had done, and 2) also, to obtain some information on management for fish and game.

What Was Accomplished And How

A. A talk was given by Jack Dixon, Fisheries Manager, Northeast District, Massachusetts Department of Fisheries and Game. His talk included fisheries management with expert fly fishermen fishing in the background at one of the two ponds on club land.

B. A talk was given by Charles Conlin, Soil Conservation Services, at the second pond, in reference to construction specifications and equipment with a demonstration of fire protection by the fire crew, Massachusetts Department of Natural Resources, using portable fire pumps and forestry hose.

C. A talk was given by the Massachusetts Department of Fisheries and Game, District Manager, Walter Hoyt, at the cleared land under the power line for game feed plots.

D. Lunch at the Club House.

E. A talk was given by the Club Conservationist, Gaylord Stockwell at an open area in the woodland on the history of the Club's timber stand improvement work and tree planting. Also at this site, a talk was given by Walter Hoyt

on the idea of keeping these areas open for game management and encouraging plants for wildlife feeding: such as, Amelanchier, Populus, and Vaccinium, which are native and growing in the open areas.

F. The next stop on the tour was a marked plot showing the timber management aspect of the woodland. The State Extension Forester, John Noyes, and the District Forester for Middlesex County, Willard H. Estes, both spoke at this site in reference to forest management and the new classified forest law.

G. The last stop was by a brook where the District Wildlife Manager talked about stream management.

Accomplishments Of The Club On 230 Acres:

- A. Two ponds constructed.
- B. Three timber sales marked.
- C. 50 acres of timber stand improvement work completed.
- D. Access Roads kept open and maintained.
- E. Funds derived from fishing derbies and timber sales have been put into land acquisition, pond construction, and timber stand improvement.

Besides the individual visits with forest landowners considerable time has been given to meetings and inspections in regard to forestry practices under the auspices of the U. S. Agricultural Stabilization and Conservation Service. This is a federal agricultural subsidy program which pays part of the cost of forest improvement practices such as weeding, thinning and pruning. Our foresters give prior and final approval on these practices.

From time to time forest industry woodland owners are helped with their problems. The following is a good example of such help.

Even Dogs Have Colorful Bedding

During the summer of 1971 a new forest industry, utilizing eastern white pine chips from a local sawmill, was established in the Town of Plympton. This wood residue industry processed the wood chips by screening them for size, injecting color into them and bagging them in plastic bags. The bags of colored wood chips are then sold to the horticultural market. Most of the colored wood chips are sold at garden supply centers for a colored mulch.

A Wood Utilization Specialist from the U. S. Forest Service located at Portsmouth, New Hampshire was requested to make a visit. When the visitation was made, the coloring process and injecting of odors into wood residues was discussed. The Plympton Mill then tried to inject cedar odor into eastern white

pine shavings as an experiment. These shavings were to be sold to pet supply outlets for pet bedding.

During the winter of 1971, an old wood industry was sold to a new owner. This mill located in the Town of Hanson produces dog bedding from Atlantic white cedar by milling cedar bolts with excelsior machines.

A visitation to this mill shortly after it came under new management brought a new problem to light. This problem was a lack of a supply of suitable Atlantic white cedar that could be processed into dog bedding.

It was then suggested that the two mills get together, which took place in the Spring of 1971. A trial batch of shredded eastern white pine was injected with cedar odor as a substitute for the more expensive Atlantic white cedar bedding.

Both of the mills are apparently now going to work together on the process of eastern white pine dog bedding with an injected cedar odor as an inexpensive substitute for cedar dog bedding.

A Substitute for State Tree Seedlings.

This Division went out of the business of raising and furnishing seedling trees for landowners in 1970. Therefore, we have made a listing of a number of private nurseries which sell similar size and species of tree seedlings in quantity at reasonable prices. This listing is sent out to anyone requesting information about obtaining seedling trees. The people are also advised to contact our foresters for further planting advice.

4. CLASSIFICATION AND TAXATION OF FOREST LANDS AND FOREST PRODUCTS

Chapter 61 of the General Laws as amended in 1969 by Chapter 873

This newly revised forest tax law completely changed the administration of this law by requiring a forest landowner to show the State Forester that his forest land was "being managed under a planned program to improve the quantity and quality of a continuous forest crop". This meant that forest management plans had to be submitted and approved through our foresters in accordance with the above quote.

We tried to warn all owners under the old law and publicize the fact that certain procedures must be found through to qualify for a Certificate of forest management from the State Forester. We also warned everyone that this Certificate must be submitted to Assessors by September 1st. As it worked out we received most

of the 119 plans submitted during the month of August. Three plans were disapproved although others had been shown in the field that they had not met the specifications of management.

The final Certification for Classification on September 1, 1970 was 116 plans covering the forest management of 16,247 acres in 48 towns. The largest number of plans (38) and acreage (6,555) was submitted in Worcester County, followed by 24 plans and 1,714 acres in Middlesex County and 20 plans and 4,194 acres in Hampshire County. This made a heavy load of work for the foresters in these three counties, not only to inspect and approve forest management plans but also the increased forest improvement work demanded under the act.

Appeals were held for the towns of Brookfield, Groton and Northampton. The State Forester ruled for the forest landowners in Brookfield and Groton but agreed on adjustments in the town of Northampton.

Although the impact was heavy and concentrated in August 1970, it was actually less than expected because people were cautious about getting involved with Section 6 of the law which required payment of back taxes if one changed the land use.

5. THE LITTLE WATERSHED PROGRAM, U.S. PUBLIC LAW #566
Mass. G.L., Chapter 132, Section 6

The principal work of the foresters under this law is similar to the Service Forestry program except it is delineated by watershed boundaries rather than by County lines. Like the Service Forestry program, the foresters furnish advice and service to woodland owners and forest industry under a Federal-State cooperative agreement.

The U. S. Forest Service allots money up to a maximum of 80% to each watershed approved for flood control.

This year, monies were allotted for the Clam, SuAsCo, Upper Quabog and West Branch of the Westfield Rivers. However, other watersheds were covered under the regular C.F.M. program with federal C.F.M. monies up to a maximum of 50% reimbursement for state expenditures.

Besides the land treatment and educational work (see chart), the foresters spent considerable time in gathering watershed and river basin land use data for the U. S. Forest Service on the Neponset, Blackstone, Nashua, Parker, Ipswich, North Shore, Merrimack, Assabet, Sudbury, Concord, Housatonic and Hoosic Rivers.

6. STATE FORESTS DEVELOPMENT

Mass. G. L. Chapter 132, Sections 31 & 33

Three temporary foresters and three assistants (Forest & Park Supervisors) try to carry on and supervise the forest management activities on some 225,000 acres of state forests & parks which have to do with the inventorying, planning, health and harvesting of this vast permanent forest resource. These foresters and their assistants should be permanent and there should be at least five units.

Forest Inventories

The biggest boost in inventorying our forest resources this year was having adequate money to get keypunching and data processing brought up-to-date on past inventory field work. This will shortly enable us to get out some up-to-date inventory reports.

The management forestry units reinventoried the October Mt., Monroe, Florida and H.O. Cook state forests under the continuous forest inventory program.

Master Plans and Planning

The Eastern forests management unit worked on maps for the Lowell-Dracut

forest master plan. They also worked up plans and maps for the Martha's Vineyard, Nantucket, Douglas and Freetown State Forests. The data for the Martha's Vineyard forest was in connection with a federal employment program called Operation Mainstream which did considerable forest improvement on this forest. The plans and maps for the Freetown forest were for a proposed Youth Corps forest improvement crew. Basic maps for handout maps were made of a number of the State Forests and Parks.

The Connecticut Valley forest management unit wrote up the master plan for the Hawley forest and made maps and forest inventory data available for the Chester-Blandford, Daughters of American Revolution and Mt. Grace master plans which were written up by the service foresters from Hampden, Hampshire and Franklin Counties.

The Berkshire forest management unit worked on plans and maps for the master planning of October Mt. State Forest.

Forest Improvement - Silviculture

Whether a forest is being managed for aesthetics and recreation for people or for forest products, wildlife and water it must be kept in a healthful condition in all cases. This means forest weedings, thinning, pruning, etc. To do this requires manpower.

As the regular forest & park crews have more and more become tied up with year-round recreational maintenance and supervision activities, the ability to accomplish forest improvement has been reduced except for Correction Department crews. There is a great need to budget for summertime forestry student crews such as we had between 1960-1969 in order to carry on this much needed improvement work. Forestry students improved 9,000 acres in this period.

The Connecticut Valley and Berkshire forest management unit checked and did maintenance work on 24 and 13 miles of boundary lines on the Conway, D.A.R., Cook, Monroe, Warwick, Chester, Montague, Florida, Mohawk Trail, Clarksburg, Mt. Greylock, Bash Bish, Savoy and Windsor State Forests.

The following is a listing of the acreage of forest improvement work accomplished this year.

FOREST	THINNING	PRUNING	LIBERATION
MYLES STANDISH	20 acres	20 acres	-
LOWELL-DRACUT	5 acres	5 acres	-
WILLOWDALE	5 acres	5 acres	-
OTTER RIVER	3 acres	-	-
WELLS PARK	2 acres	-	-
H.O.COOK	20 acres	-	-
ERVING	-	-	5 acres
TOTAL	55 acres	30 acres	5 acres

Several miles of roadside beautification was accomplished in each of the five Division Regions.

State Forest & Park Land Acquisition

The Chief Forester and all the foresters have spent considerable time throughout the year in inspecting potential areas for acquisition, making ownership studies and making reports on the advisability of acquiring innumerable areas. These involved interior lots, adjoining lots and new areas with recreational possibilities.

State Forest Timber Sales

This year the timber sales are better than last year and prices seem to be holding better. The poor quality white pine we have sold for an average

of \$17 per 1,000 board feet, whereas the fair quality hardwoods have brought better than \$34 per 1,000 board feet.

For a number of years we haven't sold much timber from eastern Massachusetts forests. This year, almost 400,000 board feet was sold in Region #2 which includes Essex and Middlesex Counties - two heavily populated counties.

Although Region #3 did not have any timber sales the management forester marked 4,000 board feet of Oak on the Spencer forest for bridge planking. He also marked 50,000 feet on the Myles Standish forest and the 106,000 foot sale on the Townsend forest.

Region #4 made only one timber sale but at the end of the fiscal year nearly 400,000 board feet was marked which will show up in sales in fiscal 1972. Some 25,000 board feet of pine was blown down in the Warwick forest by a small tornado which has been salvaged.

STATE FOREST	PRINCIPAL SPECIES	VOLUME	INCOME
<u>Region #1, S.E. Mass.</u>			
Myles Standish	Salvage Burned Pine	40 cords	\$ 40.00
<u>Region #2, N.E. Mass.</u>			
Willowdale	White Pine, Red Oak	148,000 bd. ft.	\$2,025.00
Townsend	White Pine, Oak	106,000 bd. ft.	2,520.00
Rhea Lot	Mostly White Pine	86,000 bd. ft.	1,335.00
Willowdale	Mostly White Pine	125,000 bd. ft.	2,156.00
<u>Region #3, Worcester County</u> - NO SALES			
<u>Region #4, Conn. Valley</u>			
Hawley	Northern Hardwoods Other Hardwoods	165,000 bd. ft.	\$6,601.00
<u>Region #5, Berkshire County</u>			
Beartown	Poor White Pine	136,000 bd. ft.	\$1,360.00
October Mt.	Northern Hardwoods	230,000 bd. ft.	7,058.14
TOTALS:		996,000 Bd. Ft. & 40 Cords	\$23,095.14

FOREST CUTTING PRACTICES

Mass. G.L. Chapter 132, Sec. 40-46

The 1970 Legislature changed sections 43 and 46 of this law by first increasing the penalty for owners not notifying before cutting. The second added requirement had to do with being able to revoke a required harvesters license with increased penalties for any operator who failed to follow the law.

In spite of these changes in the law, notices of cutting have not increased. This is partially due to increased demands on the foresters time in assistance to the private owners and communities.

Reports of Cutting under Chapter 132, Section 42 - Fiscal 1971

COUNTY	NOTICES	CUT PLANS	FINAL REPORTS	ACRES	TIMBER CUT 1,000 BD. FT.	PULP CORDS	NUMBER OF LICENSES
BARNSTABLE	-	-	-	-	-	-	-
BERKSHIRE	32	6	26	1,058	3,571	-	17
BRISTOL	-	-	-	-	-	-	7
ESSEX	3	3	-	37	295	-	6
FRANKLIN	7	7	-	195	33,381	-	21
HAMPDEN	-	-	-	-	-	-	7
HAMPSHIRE	-	-	-	-	-	-	12
MIDDLESEX	-	-	-	-	-	-	5
NORFOLK	-	-	-	-	-	-	3
PLYMOUTH	-	-	-	-	-	-	5
WORCESTER	-	-	-	-	-	-	7
TOTALS	42	16	26	1,290	37,247	-	80

COOPERATIVE FORESTRY SERVICE TO PRIVATE WOODLAND OWNERS
(by Counties) Fiscal 1909

PROJECTS	Norfolk			Barnstable			TOTALS		
	Berkshire	Essex	Franklin	Hamden	Hampshire	Middlesex		Plymouth	Worcester
Direct Acres in County	459,000	159,000	360,000	260,000	222,000	234,000	377,000	625,000	3,089,000
Foresters (No.)	2	1	2	1	1	1	1	2	12
Service Requests (No.)	593	221	283	159	201	251	205	51	2,565
Acres (No.)	487	165	273	152	201	157	332	404	2,450
Assisted (Acres)	16,173	3,712	6,011	4,097	9,523	5,215	6,960	14,000	72,000
Management (No.)	50	30	46	32	26	17	26	1	243
Plans (Acres)	10,253	1,476	3,823	2,809	5,063	1,416	6,020	10,000	45,190
Tracts (Acres)	455	183	87	39	156	115	155	1	1,300
Tracts (Vol. 121)	1,905	1,012	293	204	666	554	297	100	5,200
Tracts (Acres)	1,103	84	190	149	256	185	660	100	3,001
Tracts (Vol. 121)	4,300	549	727	314	835	701	1,507	1,901	11,610
Tracts (Vol. 31)	103,795	16,160	13,620	6,400	26,669	15,187	26,870	59,000	285,000
Tracts (Acres)	34	16	29	11	44	13	9	10	210
Tracts (Acres)	370	97	222	164	107	110	128	512	1,004
Tracts (Acres)	24	3	6	12	2	2	20	50	160
Tracts (Acres)	2	4	6	7	5	0	0	1	54
Tracts (Acres)	0	40	0	205	0	0	0	50	210

PUBLIC LAW #566

ACCOMPLISHMENTS IN FLOOD CONTROL LAND TREATMENTS

(by Watersheds) FISCAL 1971

ACTIVITY	BLACKBERRY RIVER	BRADLEY BROOK	CLAM RIVER	QUAHEG RIVER	SOUHEGAN RIVER	SUASCO RIVERS	W.B. WESTFIELD	TOTALS
SKID ROAD (MILES)	0		2	0	0	0	0	2
EROSION (ACRES)	0		8	0	0	0	0	3
TREES PLANTED (ACRE)	10		0	16		1		17
TREES (NO.)	0		0	16,000	1,000			17,000
HYDROLOGICAL MARKER	0		0	35	0	0		35
TEST TREATED (ACRE)	32	30	10	97	3	50	30	250
HARVEST CROPPING								
MARKED (ACRES)	0	0	25	10		25	22	142
CUT (ACRE)	10	40	345	130		0	152	577
FLOOD CONTROL ACRES, (FEET)	0	2,500	0	7,920	0	0	0	10,420
TYPE CONTROL POINTS (NO.)	0	0	0	2	0	0	1	3
OTHER MEASURES (NO.)	0	3	2	20			8	33
MANAGEMENT PLANS (NO.)	1	1	11	17	1	1	11	43
AREA INVOLVED (ACRES)	700	10	833	595	30	25	1,530	3,723
ACQUISITION OF LANDS CONTACTED								
TOTALS REPORTER (NO.)	0	0	0	5	0	0	26	31
TOTALS (NO.)	3	7	12	63	0	25	25	120
ACQUISITION OF LANDS ASSISTED								
TOTALS (NO.)	2	1	3	20	0	13	24	63
MANAGEMENT PLANS (NO.)	1	6	9	48	1	12	16	93
ACQUISITION OF LANDS (M.D.)	0	1	0	25	0	2	3	31
TOTALS (M.D.)	0	3	12	83	4	34	0	100

